REMARKS

Status of the Claims

Claims 17, 20-23, 26-29, and 31-43 are pending. Claim 17 is the only independent claim. Claims 40-43 are withdrawn. In this Reply, claim 17 has been amended to incorporate the subject matter of claims 25 and 30. Claims 24-25 and 30 have been cancelled. Support for the amendments exists, *inter alia*, at paragraphs [0018] and [0023] of the substitute specification. No new matter has been added.

Applicants respectfully request the Examiner to reconsider and withdraw the rejections in view of the foregoing amendments and the following remarks.

Claim Rejections Under 35 U.S.C. § 103

The following rejections are respectfully traversed: (1) the rejection of claims 17, 20-29, 31-33, 35-37, and 39 under 35 U.S.C. § 103(a) over EP 1138794 ("Spanjers et al.") in view of Lyle et al., "Aluminum Alloys," Ullmann's Encyclopedia of Industrial Chemistry, 2000 ("Lyle et al."); and (2) the rejection of claims 17, 20-29, 31-34, and 36-39 under 35 U.S.C. § 103(a) over U.S. Patent No. 3,619,181 ("Willey").

The presently claimed cast aluminum alloy is suitable for thermally highly stressed cast parts. Page 1, paragraph [0002]. It comprises at least magnesium (Mg), silicon (Si), scandium (Sc), ***titanium (Ti), gadolinium (Gd)***, and aluminum. In particular, the Mg content is 3.0-6.0 % by weight. The Si content is > 1.0 - 4.0 % by weight. The Sc content is 0.01 - < 0.5 % by weight. ***The Ti content is 0.05 - 0.15 % by weight. The Gd content is at least 0.001 % by weight.*** The alloy may also comprise 0-0.05 % by weight zinc (Zn); 0 - 0.5 % by weight of at least one element selected from the group consisting of zirconium (Zr), hafnium (Hf), molybdenum (Mo), terbium (Tb), niobium (Nb), erbium (Er) and vanadium (V); 0 - 0.8 % by weight manganese

(Mn); 0 - 0.3 % by weight chromium (Cr); 0 - 1.0 % by weight copper (Cu); 0 - 0.6 % by weight iron (Fe); and 0 - 0.004 % by weight beryllium (Be). However, the total amount of impurities is not more than 0.5 % by weight and no single impurity is present in an amount of more than 0.1 % by weight.

In contrast, Spanjers et al. discloses an aluminium-magnesium casting alloy having the following composition in weight percent: 2.7-6.0 Mg; 0.4-1.4 Mn; 0.10-1.5 Zn; 0.3 max. Zr; 0.3 max. V; 0.3 max. Sc; 0.2 max. Ti; 1.0 max. Fe; and 1.4 max. Si. Page 3, paragraph [0012].

Willey discloses aluminum scandium alloys. The amount of scandium present in the aluminum alloys is about 0.01 to about 1.0 percent by weight of the total alloy. The alloys contain about 85 percent or more by weight aluminum and at least one element selected from the group of essentially character forming alloying elements (manganese, zinc, beryllium, lithium, copper, and magnesium). If magnesium is present, it is about 0.5 to about 10 percent by weight of the total alloy. Silicon can be present in the alloys in an amount from about 0.25 to as much as 15 percent. The alloys may also contain ancillary alloying elements including titanium in an amount of about 0.01 to 0.15 percent. See col. 1, line 20-col. 2, line 23.

Neither the combination of Spanjers et al. in view of Lyle et al. nor Willey disclose or suggest each and every element of the presently claimed alloy. The presently claimed alloy includes ***at least 0.001 % by weight gadolinium (Gd)***. Notably missing from the alloys of Spanjers et al. and Willey is gadolinium. Lyle et al. does not correct the deficiencies of Spanjers et al. because Lyle et al. does not disclose the presence of gadolinium in aluminum alloys. Accordingly, the presently claimed alloy is not obvious over either the combination of Spanjers et al. in view of Lyle et al. or Willey.

Therefore, for at least the reasons discussed above, withdrawal of these obviousness rejections is respectfully requested.

The rejection of claims 17, 20-24, 26-35, and 38-39 under 35 U.S.C. § 103(a) over U.S. Patent No. 5,055,257 ("Chakrabarti et al.") in view of Sanders,

"Aluminum and Aluminum Alloys," Kirk-Othmer Encyclopedia of Chemical Technology, 2002 ("Sanders") and Lyle et al. is respectfully traversed.

Chakrabarti et al. is directed to special aluminum alloys adapted to superplastic forming at elevated temperatures. Col. 1, lines 14-17. In particular, Chakrabarti et al. is directed to the inclusion of small but effective amounts of the element scandium in aluminum alloys. Col. 2, lines 12-16. In addition to scandium, it is preferred that the aluminum alloy contain one or more elements which are in solid solution at superplastic forming temperature and which, in combination with Sc, lower its flow stress at superplastic forming temperature. Accordingly, the aluminum alloy contains selected amounts of one or more of the elements magnesium, silicon, copper, silver, germanium, lithium, manganese, or zinc in an amount, typically 0.1% or more, that provides at least some of the element in solid solution at superplastic forming temperature and which alters the flow stress of scandium-containing aluminous metal at superplastic forming temperature. Col. 3, lines 9-25. The alloys can contain various other elements as ***impurities***. Col. 3, lines 31-36. The alloys can also contain gadolinium in an amount of at least about 0.01 or 0.02% up to maximum amounts of 4% or 5% or up to 10%. Col. 8, lines 37-65.

The combination of Chakrabarti et al. in view of Sanders and Lyle et al. does not disclose or suggest each and every element of the presently claimed alloy. The presently claimed alloy includes ***0.05 - 0.15 % by weight titanium (Ti)***. Chakrabarti et al. does not disclose that Ti is an impurity associated with aluminum and aluminum alloys. While Sanders discloses at page 305 that trace impurities of aluminum include Ti, Sanders discloses that most of these trace impurities are present in quantities substantially below 100 ppm (i.e. ***substantially below 0.01 wt%***). At page 12, Lyle et al. discloses Ti as an impurity in aluminum in an amount of ***0.005-0.020%***. The lower limit of the presently recited amount of Ti is significantly greater than the impurity levels disclosed in Sanders and Lyle et al. Accordingly, the presently claimed alloy is not obvious over Chakrabarti et al. in view of Sanders and Lyle et al.

Therefore, for at least the reasons discussed above, withdrawal of the obviousness rejection is respectfully requested.

Conclusion

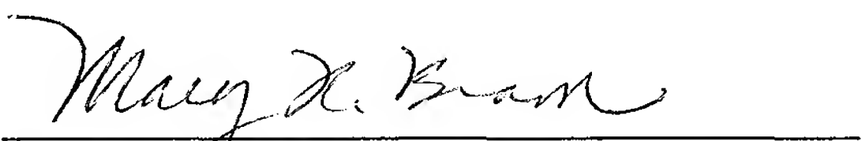
In view of the foregoing, the application is respectfully submitted to be in condition for allowance, and favorable action thereon is earnestly solicited.

If there are any questions relating to this Reply or the application in general, it would be appreciated if the Examiner could telephone the undersigned at (202) 624-2871 so that examination of this application may be expedited.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 056226.57663US).

Respectfully submitted,

September 14, 2010



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